

R. Van Burg

IN THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MISSOURI
WESTERN DIVISIONMICHELLE STEELE,)
(individually and as personal)
(representative of the estate of)
(ANNA MAY STEELE, and)
(CHARLES E. STEELE, JR.,)

Plaintiffs,)

-VS-)

BROWN & WILLIAMSON TOBACCO)
CORPORATION,)

Defendant.)

No. 97-0961-CV-W-3
Monday, May 10, 1999
Volume 6-B
Kansas City, Missouri
CIVILTRANSCRIPT OF JURY TRIAL
BEFORE THE HONORABLE ORTRIE D. SMITH,
UNITED STATES DISTRICT JUDGE.

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1 kind of brick. And that, of course, would have then been
 2 mixed up with a batching process and, again, would have
 3 generated dust.
 4 Q. Has IRAC had any particular designation of chromium
 5 compounds?
 6 A. Chromium compounds are Group I carcinogen, according to
 7 IARC.
 8 Q. After reviewing all of the different substances that
 9 Mr. Steele was exposed to at Harbison-Walker, how would you
 10 rate these exposures?
 11 A. Well, from the descriptions, the descriptions are
 12 really graphic from the depositions, I mean, they were
 13 exposed to white dust, they had dust all over the place.
 14 The dust was getting out into the environment, it was
 15 settling down on the cars.
 16 By the fact that Mr. Steele was in there during
 17 the mixing and grinding, which is the known worst, dustiest
 18 area of a brick refractory, I would say that he certainly
 19 had a significant exposure. And he had a significant
 20 exposure to a number of known human carcinogenics.
 21 Q. You mentioned the dust getting out into the
 22 environment. What is the significance of that, Dr. Von
 23 Burg?
 24 A. Well, it's a matter of, here is a man who was exposed
 25 to very high levels of dust in the workplace and then even

EXHIBITS

	Offered	Received in Evidence
For the Plaintiff:		
No. 196	1088	1088
For the Defendant:		
No. DCS-00024	1102	1102
No. DCS-00028	1079	1080
No. GC 7-A	1181	1181
No. GC 7-B, C & D	1184	1185
No. GK-43	1174	1174
No. GK-59	1192	1192
No. GST-24 & 25	1078	1078
No. TG-515	1188	1189

1 going home he couldn't get away from it, because it was
 2 traveling out into the environment to his home with him. So
 3 he -- admittedly he had lower levels of dust exposure, but
 4 he certainly had higher levels of dust exposure than, you
 5 know, we would expect someplace else.
 6 Q. How did his dust exposure at Harbison-Walker compare
 7 with the dust from Artra Aluminum?
 8 A. Well, bearing in mind that we had a -- certain number
 9 of materials were common, we know that he was exposed to
 10 sulfur dioxide, that was common at the two places. We know
 11 that he was exposed to pHs, again, a certain amount of
 12 commonality. However, now we go into, you know, a new type
 13 of material, we go into aluminum grindings, aluminum
 14 shavings, aluminum fibrous.
 15 Again, by the fact that you are there. You know,
 16 most of us have done some sort of sanding, sort of wood
 17 cutting. Do you know how much dust is generated by those
 18 processes? You can imagine if you do that for eight hours
 19 of day, what is the level of dust that you are going to be
 20 exposed to? There are going to be high, high levels of
 21 dust.
 22 And therefore, again, because he was exposed for
 23 that length of time at Artra, I believe it was about 6 years
 24 -- I can't read the number from here and at Harbison-Walker
 25 it was about 10 years, am I correct in those numbers?

1 MONDAY, MAY 10, 1999, AFTERNOON SESSION
 2 THE COURT: Are we ready to resume?
 3 MS. FEY: Yes, Your Honor.
 4 THE COURT: Okay.
 5 MS. FEY: We are ready, Your Honor.
 6 THE COURT: All right. Let's bring the jury in.
 7 (The jury was brought into the courtroom.)
 8 THE COURT: Please be seated.
 9 Ms. Fey, you may resume.
 10 MS. FEY: Thank you, Your Honor.
 11 RUDOLPH VON BURG
 12 RESUMED THE STAND AND TESTIFIED FURTHER ON
 13 CONTINUED DIRECT EXAMINATION
 14 BY MS. FEY:
 15 Q. Dr. Von Burg, you mentioned chromium compounds as being
 16 something that Mr. Steele would have been exposed to at
 17 Harbison-Walker. How do you know that?
 18 A. Well, two ways. First of all, as I pointed out,
 19 chromium compounds are natural components of the minerals
 20 that you would grind up to make the bricks with. The other
 21 way that we know that chromium compounds are used is that
 22 Harbison-Walker produced a chromite type of brick which was
 23 a particular type of refractory brick, so they probably
 24 would have imported additional chromium material. They
 25 needed to import additional chromium material to make that

1 Q. I think we need to switch it, 10 years at Artra and
 2 about six at Harbison-Walker.
 3 A. Oh, ten years at Artra. We have a good length of time
 4 at very high levels of materials that are considered to
 5 cause cancer.
 6 Q. And you stated that the most significant exposures that
 7 Mr. Steele had were at Artra Aluminum and at
 8 Harbison-Walker?
 9 A. Yes.
 10 Q. Were there other places of employment where he also had
 11 exposures to other carcinogenic or toxic substances?
 12 A. Well, I mean, I have listed on that diagram about eight
 13 potential areas. And of the eight, seven are indeed
 14 occupational exposures. You know, we can start anywhere on
 15 that. Hay hauling. We'll start on that one, one of the
 16 lower ones there.
 17 He did hay hauling for a number of years as a
 18 young man. Well, what happens when you are exposed to hay?
 19 Well, you are exposed to hay dust, it's an organic dust.
 20 You're exposed to the dust that's generated by the mold in
 21 the hay. You're supposed to be the bacterial dust.
 22 Now, these are not carcinogenics. All right?
 23 However, they are lung irritants. By being a lung irritant,
 24 they set up a lung inflammation.
 25 And then once they set up a lung inflammation, you

1 just become more susceptible to other insults to the lungs.
 2 We know that he was fairly heavily exposed to hay too, but
 3 we have descriptions that, again, in the depositions, that
 4 the hay would get caught in his throat. You know, that's
 5 not an incidental exposure.

6 We have descriptions of, well, he used to chew
 7 tobacco in order to help clear the hay out of his mouth and
 8 out of his throat. Again, the point of it, this is not an
 9 incidental exposure to hay. Of course, he's beginning to
 10 smoke tobacco at this point.

11 Q. Were there other exposures through other workplace
 12 employments?

13 A. Well, after the hay hauling, I think I have listed up
 14 there Ting Palmer where he worked in the cement industry
 15 where he is pouring cement. Most of us have poured cement.
 16 You take this big bag of powder and you flop it out into a
 17 tray and you get a snoot full of cement dust, right? This
 18 is Portland Cement.

19 You know what Portland Cement consists of. It,
 20 again, contains crystal and silica. It, again, contains the
 21 same chromium compounds that you will find in minerals, and
 22 therefore, we could have expected to have these materials in
 23 the dust that is being generated.

24 Q. Doctor, you said Portland Cement. How do you know that
 25 he was exposed to Portland Cement?

1 A. Well, we go back into Percival Potts, an English
 2 physician. We decided that there was a high incidence of
 3 lung cancer and scrotal cancer in chimney sweeps.

4 What are chimney sweeps exposed to? Well,
 5 chimney sweeps are exposed to, first of all, burning coal,
 6 because it was London at the time, so he was exposed to coal
 7 tar and all the products of coal tar. Now, he did something
 8 very simple, okay? He just made chimney sweeps take baths.
 9 And all of a sudden he found out that the scrotal cancer
 10 disappeared, but the lung cancer stayed.

11 So what about these coal tar products? These coal
 12 tar products is what is typically used, if not solely used,
 13 in roofing materials. So your roof consists of coal tar
 14 material. And every time you drive down the street behind a
 15 coal tar truck or one of these roofing trucks, it's got a
 16 little furnace going and throwing all these fumes in the
 17 air. Guess what? You are being exposed to coal tar fumes
 18 from this material.

19 Q. Doctor, how significant would that exposure be when the
 20 deposition testimony indicates that he only did roofing work
 21 for Mr. Nation eight to 12 times?

22 A. Well, he did it eight to 12 times, but the simple
 23 process is in ripping up it rises the dust. In the process
 24 of raising the dust these eight to 10 times being exposed,
 25 now, I am not going to say that's a very significant

1 A. Well, the cements that you use in pouring foundations
 2 or sidewalks or driveways, that generally comes under the
 3 term of Portland Cement.

4 Q. Is that --

5 A. Because that's a binding agent. The principal binding
 6 agent that is being used.

7 Q. Is that used throughout the industry?

8 A. This is used throughout the industry, yes.

9 Q. Would that have been used at that time period, '57 to
 10 '66?

11 A. Most certainly, yes. Now, let's look at the form of
 12 cement. If we can get just a little bit closer. So we have
 13 got him being exposed to crystalline silica, okay. We know
 14 that's a bad actor.

15 We get him exposed initially to chromium
 16 compounds. Well, that's a pretty bad actor too. Now, let's
 17 look at something else that's important in cement and that's
 18 called, I have it listed up there as hydroxyl compounds.

19 Q. What are those?

20 A. Hydroxyl compounds are special compounds, again, that
 21 are inherent in the dust. When you now inhale this dust,
 22 again, it reacts with the water in the lung but now it forms
 23 an alkali. An alkali is like Draino, if you will. All
 24 right. Now this material is very, very caustic to the
 25 lungs.

1 Q. What do you mean by caustic, Doctor?

2 A. Well, you can chemically burn the lungs, you can
 3 destroy the tissue in the lungs by inhaling these caustic
 4 materials. So this is why the cement industry, in this day
 5 and age, has regulations that are intended to limit the
 6 amount of exposure to dust. First of all, you are getting
 7 irritation, you are getting corrosion and damage by the
 8 caustic -- what is in the cement and then also -- you are
 9 breathing crystalline silica going in on top of that. Okay?
 10 It is not a good scene at all.

11 Q. Were any of those three materials listed by IARC as
 12 Group I carcinogens?

13 A. Well, the crystalline silica is a Group I carcinogen
 14 that we were talking about here. All right?

15 Q. What about other places, Doctor?

16 A. Well, moving there to the other side. I can't read it
 17 from here.

18 Q. Do you want to come to the board?

19 A. Yes. Can I go up?

20 (The witness left the stand and went to the
 21 exhibit.)

22 A. We have him dealing with Larry Nation and coal tar
 23 products. Coal tar products, we know that coal tar products
 24 are carcinogenic since the 1900s.

25 Q. How?

1 exposure, but it's something that has to be considered,
 2 again, because of what I said is, here's a man that no
 3 matter what he did, he was being exposed to some sort of
 4 lung insult. So this just indicates -- again, it is
 5 additional lung insult. Not something that you and I would
 6 ordinarily do.

7 Q. Were there other exposures?

8 A. All right. Well, going up the list, well, he did some
 9 cement work with Larry Nation. Well, the same cement work
 10 that he did here with Larry Nation we could apply or take
 11 the same rationale from Ting Palmer and say, well, he did
 12 cement work so he was exposed to chromium, for example, as
 13 well as crystalline silica.

14 Then we go into a self-cleaning, the commercial
 15 cleaning operation.

16 Q. What did that operation involve, Doctor?

17 A. Well --

18 Q. What kind of work was that?

19 A. Okay. I am getting there.

20 Q. Okay. I'm getting impatient.

21 A. Okay. Be patient. Basically what he did is he turned
 22 into a chimney sweep at this point. He went -- he decided
 23 to go and clean the hoods of restaurants and degrease these
 24 hoods of all of this material that is coming off the flames
 25 or all the charbroiled hamburger is always going up the vent

1 and inside these hoods. Now, you have to get inside these
 2 hoods and you've basically got to scrape and peel this
 3 material off.

4 Q. How do you do that?

5 A. Well, you probably use some sort of metallic implement,
 6 just like a paint scraper or something like that. Once you
 7 get the worse of it off, you would use some sort of a
 8 cleaning solution.

9 What are the common cleaning solutions that were
 10 used in that period of time? Well, methylene chloride,
 11 trichloroethylene. What is important about that? Well,
 12 these are also carcinogenic materials. I mean, if you
 13 weren't aware of that you could, obviously, be exposed
 14 through the hands, through the fumes of these materials.
 15 And again, more PAHs, as well as some unknown solvents that
 16 are coming out of this. Again, more of this stuff, probably
 17 in this new job, more of this stuff.

18 Q. Were there other exposures?

19 A. Well then, from 1900 to '95 he went and joined the city
 20 of Vandalia and he went into the Public Works Department.
 21 In the Public Works Department, of course, you are dealing
 22 with roads. My understanding here is that there were two
 23 primary aspects that he did of the road work. First of all,
 24 he was the roller operator. Well, they went and they would
 25 repave a road. They take a heavy oil -- remember, I worked

1 in the petroleum industry. This heavy oil is nasty stuff.
 2 Q. What do you mean when you say that?
 3 A. It is loaded with carcinogenics. We did mouse skin
 4 painting studies. Have you people heard that term? I would
 5 probably get 90 percent of the mice getting a skin cancer if
 6 I painted this stuff on them. Okay? Basically, this road
 7 oil is a waste from the refinery.
 8 And what do you? You try to turn the waste into a
 9 product. Well, let's turn it into a product that we can put
 10 it on the roads. So they put it on the road. And then what
 11 you do after that is you roll gravel over that and then you
 12 want to imbed that gravel into this heavy oil and then you
 13 take these heavy rollers and you roll the gravel away.
 14 So what have we got going here? We have this
 15 heavy oil, we have all of the volatiles coming out of this
 16 heavy oil while this road is drying. Well, it's going to
 17 dry by letting things evaporate out of the surface.
 18 Q. What is the significance of that?
 19 A. Well, all of these volatiles are the same volatiles --
 20 the materials that are in this road oil, they are going to
 21 volatilize and these are the same materials that have caused
 22 the skin cancer in the mice. Okay?
 23 Then we have them laying down gravel. What are we
 24 doing when we're laying down gravel? If we're not careful,
 25 we're generating dust, aren't we? We're shoveling gravel

1 and thus you generate dust. What kind of dust is it? Well,
 2 there is silica in it for sure.
 3 Q. How do you know that?
 4 A. Well, silica is pretty hard to get away from, there are
 5 very few types of rocks and minerals on this earth that
 6 don't have silica in them. And again, because there is this
 7 kind of thing against silica, silica containing gravel
 8 material would be the cheapest type of material that you
 9 could buy. All right?
 10 So you have again -- so this was the new paving
 11 operation. What else did Mr. Steele do? Well, he also
 12 oiled roads. Again, they used this heavy motor oil and, of
 13 course, when you're oiling a road, motor oil is pretty heavy
 14 so they cut it with diesel fuel, make it a little bit more
 15 viscous -- or less viscous so you can spray it easily and
 16 then they heated it up.
 17 We know that Mr. Steele sat on the back of his
 18 truck and he was operating the machine that was spraying the
 19 road oil onto the road.
 20 Again, you have to deal with volatile material.
 21 He has got this volatile material behind him, this is a tank
 22 of material, now he is spraying it out, he was forming a
 23 mist so not only he's getting volatiles of vapors or gas --
 24 Q. Is that what volatiles are, vapors or gases?
 25 A. Yeah. He's also getting a mist and he's being exposed.

1 Again, additional insult. Okay.
 2 Q. Were there other environmental exposures that he had?
 3 A. Well, again, from -- I think this is deposition
 4 testimony, mainly from his sister -- we find out that Mr.
 5 Steele was born in 1939, he lived at home for about 24
 6 years. During that time the main source of heat was a wood
 7 or coal burning stove.
 8 Q. What is the significance of that?
 9 A. Well, the significant of this is -- well, first of all,
 10 let's take a look at the stove. I think many of you are
 11 familiar with these stoves, many of us grew up with the darn
 12 things, they are nasty little appliances, aren't they? It's
 13 hard to keep your house clean with these little suckers in
 14 the room, isn't it?
 15 Q. Why?
 16 A. Because they throw out so much soot and ash and dust.
 17 They are certainly handling the coal, taking the coal,
 18 simply the physical process of handling it will generate the
 19 dust. Okay.
 20 Then we burn the coal. And guess what comes from
 21 coal? Well, coal powder comes from coal, right? This gets
 22 us back to good old Percival Potts and the chimney sweeps.
 23 All right. Now we've got soot coming out of this stove.
 24 Some of it is going out the chimney, some of it is coming
 25 into the room. We know it came into the room because on

1 hard surfaces you can see the coat, or you could feel it in
 2 the room.
 3 Now we are ending up with an ash. And guess
 4 what's in the bottom of coal ash? Well, that's crystalline
 5 silica. You can't burn crystalline silica. Okay? Now you
 6 got to take the ash out of potbellied coal stove. In that
 7 process you generate more dust. Okay?
 8 Now, Mr. Steele is an infant at that stage, he is
 9 a young boy, he is a teenager. Okay? And he's being
 10 exposed. Now, I am not going to say that all of this is
 11 that significant because of us have been exposed to this
 12 type of material, but it just shows that even from an early
 13 age he is being exposed to materials that can produce
 14 potential lung damage and have the ability to potentially
 15 produce lung cancer.
 16 In comparison to these other areas, all of these
 17 will be considerably less. In other words, if the heaviest
 18 exposures he had is in these two main industries, this other
 19 considered a light exposures. The hay was a light exposure,
 20 concrete is probably a light to moderate exposure.
 21 The reason I say moderate, because of the
 22 hydroxyls that can kind of set off and start something. All
 23 right? And then we have all of these PAHs coming through in
 24 the rest of these products over here.
 25 Q. Okay. Thank you, Doctor.

1 Now, Dr. Von Burg, Mr. Steele was also a smoker.
 2 Are there carcinogenics in tobacco smoke as well?
 3 A. Well, I've got eight types of exposures here. I could
 4 add a ninth to this. In other words, I can add a yellow
 5 line here on the bottom and say smoking. So he has got nine
 6 exposure sources.
 7 Q. Dr. Von Burg, have you discussed all of the exposures
 8 that you are aware of that Mr. Steele would have had?
 9 A. Well, we know some things about Mr. Steele. We can --
 10 you know, I did not discuss all of them. We know that he
 11 did house painting, he painted a church, he painted a barn,
 12 he was a part-time auto mechanic. You know, this comes out
 13 in deposition testimony, I kind of discounted that. But you
 14 know, again, it's additional lung insult.
 15 Then the question that I come up is, well, what
 16 don't we know about Mr. Steele? We have just got a snapshot
 17 of this individual. There is a lot we don't know. There is
 18 a lot we don't know. Did he have a boat? Did he fiberglass
 19 the boat? I don't know.
 20 Q. Dr. Von Burg, what Group I carcinogenics was Mr. Steele
 21 exposed to through his various employments and his
 22 environment at his house?
 23 A. Well, we can select them out of that chart that I have
 24 up there. We have crystalline silica. We have got coal tar
 25 and coal tar products. Analogous with that we have got the

1 PAHs. We have got asbestos. We have got the chromium. Let
 2 me just go up and read the chart again.
 3 (The witness left the stand and went to the
 4 exhibit.)
 5 Okay. We have got the asbestos, we have got the
 6 chromium. If we add this line in down here, we have tobacco
 7 products as well.
 8 Q. Dr. Von Burg, what Group II-A carcinogens was he
 9 exposed to, substances that are probable causes of cancer?
 10 A. Well, the II-As would be PAHs. Okay. These are the
 11 polycyclic aromatic compounds. And I have pointed out that
 12 there are 250 of these, only 17 of which are known to be
 13 carcinogenic in animals. Okay. So if we say PAH and the
 14 benzo[a]pyrene that we drew it up on the other one, these
 15 are the particular species that have been tested in animals.
 16 However, if I want to go out and get a good source of PAHs
 17 that are carcinogenic, where am I going to? I am going to
 18 go to a coal car and a coal car is a Group A.
 19 (The witness returned to the stand.)
 20 Q. Are there any type 2-B, or possible causing cancer
 21 carcinogens that he was exposed to?
 22 A. I think diesel exhaust might fall in that category, I
 23 am not too sure.
 24 Q. Okay.
 25 A. I guess from what I have listed up there, that would be

1 the only one. I mean, I've got listed here sulfur dioxide,
2 fluorides and things of that nature. I am not saying those
3 are carcinogenic, but I am saying they are nasty and they
4 are irritating and they can set stages.
5 Q. When you say they can set stages, what do you mean?
6 A. Well, happens is that you introduce a certain amount of
7 tissue damage or lung damage, and therefore you are certain
8 to become more susceptible should something else come along.
9 You have kind of compromised the body and the body is no
10 longer quite able to defend itself against an insult as much
11 as it would have been if I hadn't set the stage by
12 irritating.

13 Q. And according to IARC the substances that you have
14 referred to are Group I carcinogens. That means again,
15 what?

16 A. That means that they are considered to be specifically
17 human carcinogens.

18 MS. FEY: Your Honor, at this time I would like to
19 mark Dr. Von Burg's exhibits that he has prepared, the
20 written out exhibits, as GST-24 and GST-25 and would move
21 for their admission.

22 THE COURT: Mr. Cronan.

23 MR. CRONAN: No objection.

24 THE COURT: Defendants GST-24 and 25 are admitted
25 without objection.

1 (DEFENDANT'S EXHIBIT NOS. GST-24 AND GST-25 ARE
2 ADMITTED INTO EVIDENCE.)

3 MS. FAY: And, Your Honor, for the record, GST-24
4 is Artra Aluminum and GST-25 is Harbison-Walker.

5 BY MS. FEY:

6 Q. Dr. Von Burg, are you familiar with the term
7 overwhelming a person's natural defenses?

8 A. Yes, I am. It is, again, a fairly common term in
9 toxicology.

10 Q. What does that mean?

11 A. That's an expression that is used when you -- in animal
12 testing where you really apply what we refer to heroic
13 doses, doses that the animal would ordinarily not be exposed
14 to. I think most of you will recognize that the saccharine
15 testing, when saccharine came out to be labeled a carcinogen
16 because of rat studies, okay? It was equivalent of you
17 sitting down and eating two and a half pounds of saccharine
18 a day. Okay.

19 That's what I call heroic testing. Now, if you
20 take these heroic doses, you take them or an animal gets
21 exposed to these heroic doses, what you are going to do is
22 you are going to break down the animal's defense mechanism.
23 You just have overwhelmed their entire system, the animal
24 loses its defense mechanism and it's going to respond by
25 manifesting some type of a disease.

1 Q. And what is the significance of that in terms of your
2 conclusions here today?

3 A. Well, these exposures that we are dealing with, with
4 Mr. Steele, we have got a broad spectrum of different levels
5 of exposure. But when we are looking at the Artra Aluminum,
6 and when we are looking at the Harbison Walker, I am going
7 to classify those exposures as heroic levels, these are
8 tremendous amounts of exposures that he is getting at these
9 levels. And he is certainly going to overwhelm any kind of
10 defense system that he has.

11 Q. Dr. Von Burg, let's turn quickly to another topic.
12 What does the Surgeon General have to say about using
13 epidemiology to determine the cause of disease in any
14 particular individual?

15 A. Well, that's a very interesting question because the
16 response is five pages of the Surgeon General's report. I
17 believe we have an exhibit on that.

18 Q. Would that assist you in explaining that to the jury?

19 A. It would help me tremendously, yes. Thank you.

20 MS. FEY: Your Honor, I would move for the
21 admission of DSC-00028.

22 MR. CRONAN: No objection, Your Honor.

23 THE COURT: DSC-00028 is admitted without
24 objection.

25 (DEFENDANT'S EXHIBIT NO. DSC-00028 WAS RECEIVED IN

1 EVIDENCE.)

2 BY MS. FEY:

3 Q. What did the Surgeon General have to say about that,
4 Dr. Von Burg?

5 A. If I may come down to read it?

6 Q. Certainly.

7 (The witness left the stand and went to the
8 exhibit.)

9 A. Okay. This is out of the 1985 Surgeon General's
10 report. It also appears in a 1965 Surgeon General's report.
11 I did not find it in '75, but it is probably there. What is

12 says, "For a single individual," okay, "epidemiologically
13 derived estimates of relative risk, which generally indicate
14 an excess risk incurred by virtue of exposure to a
15 particular agent," okay, "as compared with nonexposure,"
16 that's what relative risk is. All right. "Such a measure
17 of relative risk cannot be interpreted directly as a

18 quantitative indicator of the chance that a particular
19 individual," in this case Mr. Steele -- in this case that
20 the exposure to any one of these agents is responsible for
21 the occurrence of his lung cancer.

22 Q. Doctor, explain to me in more laymen's terms what that
23 means.

24 A. Well, let's just put this thing back up for a second.

25 Please bear with me and imagine now that we have tobacco --

1 a tobacco line down here. Okay. We've got Mr. Steele being
2 exposed to tobacco products. We've got him significant
3 exposures up here in the Artra Aluminum foundry and at
4 Harbison-Walker. Okay.

5 We have other exposures, admittedly they are not
6 so large. Admittedly, they may not be so significant. But
7 we have got at least, in a total here, eight plus tobacco,
8 nine areas, nine areas where he could have acquired the lung
9 cancer. And for any legitimate scientist to say that he can
10 saying that Mr. Steele's cancer is caused by any one of
11 these --

12 MR. CRONAN: Your Honor, may we approach?

13 THE COURT: You may approach.

14 (Counsel approached the bench.)

15 MR. CRONAN: He is now commenting on the
16 credibility of other witnesses by saying what other people
17 or any legitimate person would do. I think that's highly
18 improper and he has gone on and on. This is too much.

19 THE COURT: You have shown remarkable patience.

20 Sustained.

21 (The proceedings returned to open court.)

22 BY MS. FEY:

23 Q. Dr. Von Burg, do you agree with this statement of the
24 Surgeon General in 1985?

25 A. Yes, that's based on sound toxicological principles.

1 MS. FEY: Thank you, Dr. Von Burg, I have no
2 further questions.

3 THE COURT: Mr. Cronan, cross-examination.

4 MR. CRONAN: Thank you.

5 CROSS-EXAMINATION

6 BY MR. CRONAN:

7 Q. Let's see, Doctor, for \$20,000, and a couple of hours
8 of testimony you have come here to tell us that you don't
9 know what caused Mr. Steele's lung cancer, isn't that right?

10 MS. FEY: Objection, Your Honor. Argumentative.

11 THE COURT: Overruled.

12 BY MR. CRONAN:

13 Q. You may answer, sir.

14 A. I may answer. I'm saying that based on sound

15 scientific principles -- and I consider myself --

16 Q. Yes or no. Are you saying that you know what caused
17 his cancer?

18 A. I am saying that I do not know what caused his cancer.

19 Q. Thank you. You also don't know what the level of
20 exposure in a quantifiable amount at Artra Aluminum was to,
21 say, aluminum shavings?

22 A. I can certainly estimate that.

23 Q. I know that you have made some estimates, but you don't
24 know, you don't have any daily amount to extrapolate over a
25 period of years because you don't know exactly where he was

1 working or what the particular workload was to come up with
 2 a figure specific to him that this, in fact, is what he was
 3 exposed to, correct?
 4 A. I'm an industrial hygienist, sir, and as an industrial
 5 hygienist I am familiar with the industry. Now --
 6 Q. You've made that point, sir. You've made that point.
 7 You are using industrial standards. And what I am asking
 8 you is specifically as to Mr. Steele.
 9 You don't know on a given day what he was doing,
 10 how many parts he ground, how big the shavings were or
 11 anything specifically relative to his work, do you?
 12 A. Well, I'm sorry, I disagree with that.
 13 Q. All right.
 14 A. All right.
 15 Q. What can you tell us on a particular day that Mr.
 16 Steele did at Artra Aluminum, a plant that has been long
 17 since burned down?
 18 A. Well, based on the deposition testimony, we have Mr.
 19 Steele working in the grinding area, we have him working
 20 with, in the rough grinding area.
 21 Q. How many parts did he grind?
 22 A. It didn't matter how many parts that he ground. The
 23 fact that he was grinding all day long would be a more
 24 appropriate question, I believe.
 25 Q. You mean if he grinds one part a day or a hundred,

1 there is going to be the same amount of aluminum dust in the
 2 air?
 3 A. Well, I think what you are doing is mischaracterizing.
 4 We have a man here whose job it is to grind aluminum. Now,
 5 he is going to be grinding aluminum for eight hours a day.
 6 We know that he has a break in the morning, he has lunch, he
 7 has a break in the afternoon and then he goes home. He is
 8 certainly not, you know, smoking cigarettes and drinking
 9 coffee in the time that he is not grinding.
 10 Q. You're making that assumption, aren't you?
 11 A. I think it's a fairly safe assumption because we know
 12 that Artra had a habit of taking employees who were not
 13 fully utilized and releasing them.
 14 Q. Oh, we do? How do we know that?
 15 A. Well, we know that because Mr. Steele would work on and
 16 off for Artra Aluminum. We know that testimony from --
 17 Q. When did he get laid off from Artra Aluminum, tell us?
 18 A. Well, if I could refer to my note there, I believe we
 19 have it in the notes.
 20 Q. Refer to your notes, please.
 21 A. I'm sorry. Do you know where the other chart is?
 22 MS. FEY: It's right here.
 23 A. Well, we had him working here from 1966 to 1976. If I
 24 remember his testimony, there were periods that he was not
 25 working at Artra and not working at all.

1 BY MR. CRONAN:
 2 Q. Can you find that testimony from any witness? Do you
 3 have the depositions here?
 4 A. Well, if you give me time I could certainly do that, I
 5 believe.
 6 Q. Do you have that organized to show this jury when he
 7 was working, when he was exposed and his level of exposure?
 8 A. I don't have that in front of me at the present time,
 9 no.
 10 Q. All you have in this chart up here, correct?
 11 A. That's all I came prepared with, yes.
 12 Q. So other than having to just hunt for the reference in
 13 a deposition -- for any of the deposition references that
 14 you have made here today, you don't have that to show us?
 15 A. I have not put that in an organized fashion so I could
 16 quote it chapter and verse, no, I'm sorry.
 17 Q. Do you know the exposure levels of Mr. Steele to diesel
 18 exhaust fumes?
 19 A. I imagine that the diesel exhaust fumes that I have
 20 listed would have been somewhere between 1990 and 1995. He
 21 probably would have had standard exposures, diesel exhaust
 22 fumes, that any maintenance worker would have had.
 23 Q. Can you tell us how many days a week he drove a
 24 diesel-fueled truck?
 25 A. Well, diesel fuel and diesel exhaust are two different

1 things.
 2 Q. Well, I assume what goes in one end comes out at the
 3 other, as you have said?
 4 A. Well, that's true. But, you know, not necessarily
 5 sitting in the front of the cab you are probably not exposed
 6 to diesel exhaust that much, you are probably exposed to
 7 the diesel fumes, per se.
 8 Q. So we don't consider the fact that he's driving a
 9 diesel powered truck to be significant?
 10 A. If it's not an overly significant amount, no.
 11 Q. All right. And how many days was he following around
 12 behind a truck where he was exposed to diesel exhaust?
 13 A. The amount of days probably would have relied
 14 specifically on the amount of times that they were oiling.
 15 Q. How many times were they oiling?
 16 A. I don't have any exact number but, again, what I'm
 17 basing my opinion on is what is the standard of an industry,
 18 how often is this done, what are other people exposed to
 19 that do similar types of occupations.
 20 Q. So for Mr. Steele specifically you don't know?
 21 A. No.
 22 Q. Correct?
 23 A. I don't have any specific measurements for Mr. Steele,
 24 no.
 25 Q. Now, in the course of this lawsuit, you have signed an

1 affidavit in this case, which is a listing of information
 2 concerning your opinions. And then you have listed a group
 3 of exhibits that you were relying upon.
 4 Do you recall that?
 5 A. You have it in front of you, I'll agree with you.
 6 Q. All right. But do you recall that process of preparing
 7 an affidavit?
 8 A. Yes, yes.
 9 Q. And listing exhibits to go along with the affidavit?
 10 A. Yes.
 11 Q. Did you prepare that affidavit?
 12 A. I prepared the affidavit and I discussed it with --
 13 with counsel.
 14 Q. Did you prepare the list of exhibits that you would
 15 rely on in support of your opinions?
 16 A. Absolutely.
 17 Q. Let me show you now what has been marked as Plaintiffs'
 18 Exhibit 196.
 19 MR. CRONAN: May I approach, Your Honor?
 20 THE COURT: You may.
 21 BY MR. CRONAN:
 22 Q. Is that your list of supporting authorities?
 23 A. It could very well be.
 24 Q. Well, how is it identified at the top?
 25 A. Well, it says, Dr. Rudolph Von Burg, Exhibit List.

1 Q. Do you know of any exhibits on this list that you don't
 2 rely upon in support of your opinions?
 3 A. Don't rely on. No.
 4 If I put together this list and if this is what I
 5 put together, I would have relied on them, yes.
 6 Q. Did you consult with Dr. Goldstein in preparing your
 7 list of exhibits?
 8 A. No.
 9 Q. Did Dr. Goldstein consult with you in preparing your
 10 list of exhibits?
 11 A. No.
 12 Q. And nobody prepared this Exhibit 196 for you, you did
 13 it yourself, the listing?
 14 A. The listing is my list, yes.
 15 MR. CRONAN: Your Honor, at this time I offer
 16 Plaintiffs' Exhibit 196.
 17 MS. FEY: No objection, Your Honor.
 18 THE COURT: Plaintiffs' Exhibit 196 is admitted
 19 without objection.
 20 (PLAINTIFFS' EXHIBIT NO. 196 WAS RECEIVED IN
 21 EVIDENCE.)
 22 BY MR. CRONAN:
 23 Q. Would you agree, Doctor, that cigarette smoke contains
 24 known carcinogens?
 25 A. Cigarette smoke does contain known carcinogens, yes.

1 is a less than normal statistical risk of small cell lung
 2 cancer in that cohort of workers, correct?
 3 A. Statistics is a tool that toxicologists use. All
 4 right. Now, they believe that there is a statistically
 5 lower incident of small cell carcinoma in this particular
 6 cohort.
 7 Q. Right. .7?
 8 A. .7 In other words, it is less than a -- that's what
 9 the number indicates.
 10 But again, what is the reliability of that
 11 particular study? And I haven't peer reviewed. I haven't
 12 referred that study.
 13 Q. But you listed it?
 14 A. I listed it.
 15 MR. CRONAN: That's all the questions I have.
 16 Thank you, Your Honor.
 17 THE COURT: Redirect.
 18 MS. FEY: Yes, Your Honor, just a couple of
 19 questions.
 20 REDIRECT EXAMINATION
 21 BY MS. FEY:
 22 Q. Dr. Von Burg, you were explaining why aluminum was
 23 found in tobacco in some quantities. And you did it in a
 24 little bit of too scientific terms for me. Can you explain
 25 in laymen's terms why that is?

1 Charles Steele, I was asked to review depositions that were
 2 sent to me regarding Mr. Charles Steele, I was asked to
 3 review employment records, some job-related records and to
 4 try to make a determination as to the cause of Mr. Charles
 5 Steele's lung cancer.
 6 Q. Doctor, would you explain what an internist and a
 7 pulmonologist, the areas that you practice in, do?
 8 A. Yes. An internist is a doctor who specializes in
 9 treating diseases of organ systems within the body, such as
 10 the kidney, that would be one of organ system, the heart,
 11 the lungs, the gastrointestinal tract like the liver.
 12 A doctor who is an internist concerns himself
 13 mainly with diagnosis and treating medically. He does not
 14 do surgery.
 15 Q. What about a pulmonary medicine specialist?
 16 A. A pulmonary specialist concerns himself with the
 17 special organ of the lung. And he has extra training
 18 involved with special diseases involving the lungs.
 19 Q. Where do you practice, Doctor?
 20 A. I practice in Tampa, Florida.
 21 Q. Doctor, where did you receive your undergraduate
 22 degree?
 23 A. I went to medical school in the University of Manitoba,
 24 Canada, which is in Winnipeg, from 1972 to 1976, when I
 25 graduated in medicine.

1 A. Well, it is borders of magnitude. It gets back to the
 2 whole concept of the dose mix of a poison.
 3 The amount of the aluminum that you find in
 4 tobacco is ten orders of magnitude less than what we would
 5 expect to find in the aluminum foundry. Well, what is 10
 6 orders of magnitude? Ten orders of magnitude might be that
 7 television stand in comparison with the Judge's platform up
 8 here. Now do that three times. There is a thousand-fold
 9 difference between the amount of aluminum in cigarette smoke
 10 and in tobacco compared to what you can have in an aluminum
 11 foundry. It's a sample dose response thing.
 12 Q. That's the difference in the amounts, but what was it
 13 that you were saying about the soil, what was the effect of
 14 the soil?
 15 A. Well, the aluminum is a natural component of the soil.
 16 And the aluminum would be incorporated into any plant that
 17 you grow. And then you got aluminum in the finished chart.
 18 I don't know.
 19 Q. Doctor, in preparing to give your testimony, to provide
 20 your expert report in this case, did you actually read the
 21 depositions of co-workers and family members in this case?
 22 A. Yes, I did.
 23 MS. FEY: I have no further questions.
 24 THE COURT: Mr. Cronan?
 25 MR. CRONAN: Nothing further.

1 Q. And when you graduated in medicine, did you receive any
 2 honors or awards?
 3 A. Yes, I did. I received the gold metal in medicine in
 4 1976.
 5 Q. And what was that, what did that signify, Doctor?
 6 A. The gold metal in medicine signified first standing in
 7 the class of the medical students for that year.
 8 Q. You ranked first in your medical class?
 9 A. That is correct.
 10 Q. Did you receive any research honors?
 11 A. Yes, I did. I also did a research project during
 12 medical school and received a research award for the best
 13 research project at that time, also.
 14 Q. And, Doctor, did that research project lead to your
 15 receiving subsequent medical training?
 16 A. Yes, it was very lucky for me how this came about. I
 17 did a research project and third year medical school and it
 18 happened to be noticed by the Harvard School of Public
 19 Health and they invited me there during third year medical
 20 school to do what is called an elective.
 21 And at that time they then invited me to continue
 22 on after I graduated from medicine. And it was there that I
 23 continued my medical training after 1976.
 24 Q. And what additional training did you receive at -- did
 25 you say the Harvard School of Public Health?

1 THE COURT: All right. Thank you, Doctor, you may
 2 step down.
 3 (The witness was excused.)
 4 THE COURT: The defense may call its next witness.
 5 MR. NORTHTRIP: Your Honor, the defense calls Dr.
 6 David Goldstein.
 7 I am more used to being in the witness box, Your
 8 Honor.
 9 THE COURT: You look very comfortable at the
 10 lectern.
 11 DAVID GOLDSTEIN
 12 BEING DULY SWORN, TESTIFIED:
 13 DIRECT EXAMINATION
 14 BY MR. NORTHTRIP:
 15 Q. Doctor, would you please introduce yourself to the court
 16 and jury, please.
 17 A. My name is Dr. David Hart Goldstein.
 18 Q. And what is your occupation, Doctor?
 19 A. I'm a physician.
 20 Q. And do you have specialties, Doctor?
 21 A. Yes, I am specialized in internal medicine and
 22 pulmonary diseases.
 23 Q. And, Doctor, what were you asked to do in connection
 24 with this lawsuit?
 25 A. I was asked to review medical records concerning Mr.

1 A. The Harvard School of Public Health is where I did my
 2 research and third year medical school. But then I went on
 3 to the Bailey Women's Hospital at Peter Bent Brigham
 4 Hospital in Boston where I took my internship and I took
 5 speciality training in internal medicine and in pulmonary
 6 diseases.
 7 Q. Is the Peter Brigham Hospital affiliated with any
 8 institution?
 9 A. Yes, the Peter Bent Brigham Hospital is one of the
 10 teaching hospitals for the Harvard Medical School.
 11 Q. And would you describe your -- I believe you said four
 12 years that you spent in training there?
 13 A. I spent from the internship and a residency in internal
 14 medicine, and I also took a fellowship in pulmonary
 15 diseases. At the same time I was also doing some research
 16 in pulmonary diseases at the School of Public Health.
 17 Q. Would you describe the research that you were involved
 18 in?
 19 A. At that time the research I was doing was mainly
 20 involving developing techniques to help diagnose certain
 21 types of abnormalities in the lung. Breathing problems such
 22 as a wheezing or asthma.
 23 Q. Doctor, are you board certified in any areas?
 24 A. Yes, I am.
 25 Q. Would you tell us what those areas are and what it